

DONALD L. HAES, JR., CHP, CLSO

Radiation Safety Specialist

PO Box 198, Hampstead, NH 03841

617-680-6262

Email: donald_haes_chp@comcast.net

September 3, 2020

RE: Response to Questions during the town's webinar concerning the installation of a proposed AT&T Mobility personal wireless services (PWS) facility to be located on the Water Tank at 5 Roots Rock Road, York, ME.

Response to Questions Regarding AT&T PWS Installation On the Water Tank at 5 Roots Rock Road, York, ME	
Party Questioning	Question
Wendy Roberts	<ul style="list-style-type: none"><i>I noticed you have more background in “ionizing” radiation than “non-ionizing” radiation. How is your experience and training related to “non-ionizing” radiation?</i><i>There are not enough studies on “non-ionizing” radiation.</i><i>Is the time of exposure important, especially when the amount of time children are at home during the Covid pandemic is more than ever before?</i><i>Have you ever found a proposed (PWS) site NOT to be “safe”?</i>
Responses: <ul style="list-style-type: none">I thought this was an astute observation, considering the beginning of my career in 1975 indeed had more to do with “ionizing” radiation working on a USN nuclear submarine with reactor worker and crew safety and nuclear water plant chemistry. Nonetheless, in 1988 I was asked to become “expert” in non-ionizing radiation as an Assistant Radiation Safety Officer at MIT and by 1990, I was teaching a course in non-ionizing radiation safety at MIT. The course was “Non-ionizing Radiations: Health Physics & Radiation Protection” which I taught July 23-27, 1990. (While not specifically mentioned, I also taught similar courses at the Harvard School of Continuing Education titled "Practice of Occupational Health" Hosted by the Harvard School of Public Health, Longwood Ave, Boston MA in the early 2000's.) In fact, I was invited to join the International Committee on Electromagnetic Safety [ICES] Subcommittee-4 regarding “Safety Levels With Respect to Human Exposure to Electromagnetic Energy in December of 1990, and subsequently became the Vice Chair of Subcommittee 2 on “Terminology and Units of Measurement” and “RF safety Programs”. I also was asked to be the secretary of the Institute of Electrical and Electronics Engineers (IEEE) Engineering in Medicine and Biology Society (EMBS) Committee on Man and Radiation (COMAR) in 2018. In the last 30+ years of my consulting practice, more than 90% of my work performed has involved non-ionizing radiation.Currently there have been literally tens of thousands of peer-reviewed studies exploring the	

potential health effects of non-ionizing radiation.

- Yes, the amount of time DOES matter, and in fact the FCC RF exposure limits cover human exposure 24 hours per day, 7 days a week for ALL members of the human population.
- I assumed by “not safe” the meaning is NOT complaint with FCC regulations. Yes, I have reviewed several locations, albeit mostly in the early 1990’s before the FCC enacted the Telecommunication Act of 1996 prior to guidance about power levels and minimum mounting height (e.g. 10 meters minimum), where the site would have to be modified by reducing power or raising the height of the antennas in order to comply with FCC rules. Each site was so modified in order to assure compliance with the FFCC rules.

Nursing
Chat

- *Have the studies on non-ionizing radiation been on adults only, or have they included children as well?*
- *Have any studies on non-ionizing radiation considered “long term” exposure?*
- *This appears to be “new technology; have enough studies been done over time?*
- *What would be the change in your report and subsequent RF exposure if more PWS sites were added?*

Responses:

- The studies I have reviewed (most of those previously mentioned) have not been limited to “epidemiology”- the branch of medicine which deals with the incidence, distribution, and possible control of diseases and other factors relating to health. The epidemiological studies differentiate between “adults” and “children” and are limited to “in vivo” type studies (which refers to experimentation using a whole, living organism as opposed to a partial or dead organism.). Rather, most studies have been “in vitro” in nature, which refers to studies of biological properties that are done in a test tube, petri dish, or similar vessel. In the “in-vitro” studies which I have analyzed, the examination is better suited for observing the overall effects of an experiment on a living subject. These studies include examinations of processes and systems such as neuron excitability, neurotransmitter release (alter brain function), learning and memory for animals, blood brain barrier, melatonin, and the immune system, etc.
- There have been many studies performed on animals, mostly mammals (e.g. rodents and monkeys) that have dealt extensively with not only offspring, but generations of offspring. The limits are threshold limits, and therefore assuming RF exposures are below 100% of the limits, they are considered “safe”.
- As mentioned previously, there have been literally tens of thousands of peer-reviewed studies involving the potential health effects of non-ionizing radiation. The use of non-ionizing radiation is not “new”. Wireless radio has been around for over a century, and even law enforcement has been suing non-ionizing radiation (e.g. traffic speed detection radar) since 1948.
- As I demonstrated in my report, the difference between Figure 3 (“Theoretical Cumulative Maximum Percent MPE - vs. – Distance; Highest Values at Ground Level in Any Direction from

Existing FCC-Licensed RF Emissions, Water Tank at 5 Roots Rock Road, York, ME”) and Figure 4 (“Theoretical Cumulative Maximum Percent MPE - vs. – Distance; Highest Values at Ground Level in Any Direction from Existing FCC-Licensed PLUS Proposed AT&T Mobility RF Emissions, Water Tank at 5 Roots Rock Road, York, ME”, and Figure 5 (“Theoretical Cumulative Maximum Percent MPE - vs. – Distance; Highest Values at Ground Level in Any Direction from Existing FCC-Licensed PLUS Proposed and Future Planned AT&T Mobility RF Emissions, Water Tank at 5 Roots Rock Road, York, ME) there is a cumulative increase with each additional RF source added. As shown with the differences in Figure 3 and 4, there would be an anticipated 2% or so increase with a similar addition of a PWS carrier. There would be a distinction depending on which PWS carrier is included, and how many different technologies and antennas are added. Nonetheless, I would not anticipate the resulting total RF field would exceed FCC limits. In fact, as the PWS carriers pay billions of dollars for the right to operate their PWS facilities, and any violation of FCC rules could result in a loss of their FCC license and hence privilege to transmit and receive signals, the FCC-licensed PWS carriers are highly motivated to maintain their resulting RF emissions within FCC rules.

Dan
Bancroft

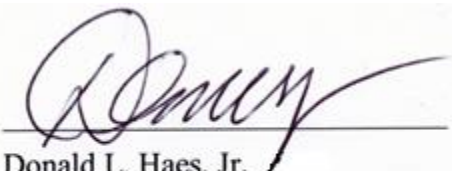
- *Has your report considered the distance from the antennas to the nearest home?*
- *Does distance matter in the calculations you performed?*
- *Have you considered the distance in your report?*

Responses:

- Yes. As I demonstrated in my report, the difference between Figure 3 (“Theoretical Cumulative Maximum Percent MPE - vs. – Distance; Highest Values at Ground Level in Any Direction from Existing FCC-Licensed RF Emissions, Water Tank at 5 Roots Rock Road, York, ME”) and Figure 4 (“Theoretical Cumulative Maximum Percent MPE - vs. – Distance; Highest Values at Ground Level in Any Direction from Existing FCC-Licensed PLUS Proposed AT&T Mobility RF Emissions, Water Tank at 5 Roots Rock Road, York, ME”, and Figure 5 (“Theoretical Cumulative Maximum Percent MPE - vs. – Distance; Highest Values at Ground Level in Any Direction from Existing FCC-Licensed PLUS Proposed and Future Planned AT&T Mobility RF Emissions, Water Tank at 5 Roots Rock Road, York, ME) there is variability in resulting RF fields on the ground with varying distances from the antennas. Although the formulas used to calculate these field values consider the hypotenuse of the right triangle associated with the relative height above ground and lateral distance from the base of the antennas, it is the LATERAL distance used to plot the graphs.
- Yes. Generally, the greater the distance the distance from the RF source, lower the resulting RF field strength. The variability has to do with the patterns of energy the directional panel antennas are designed to emit. These patterns are displayed in the appendices of my report.
- Yes, as explained previously.

Paul	<ul style="list-style-type: none"> • <i>Would these antennas be “safer” than hand-held wireless devices?</i>
<p>Response:</p> <ul style="list-style-type: none"> • Since the RF emissions from base-station antennas and those associated with hand-held wireless devices are ALL required to be within FCC rules, both would be considered “safe”, assuming they comply with FCC rules. The limits are threshold limits, and therefore there is no “lower is safer” consideration; assuming they are both below 100% of the limits. 	

Sincerely,



Donald L. Haes, Jr.
Certified Health Physicist

DONALD L. HAES, JR., CHP, CLSO

Radiation Safety Specialist

PO Box 198, Hampstead, NH 03841

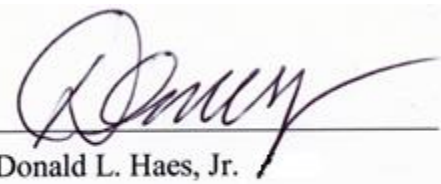
617-680-6262

Email: donald_haes_chp@comcast.net

STATEMENT OF CERTIFICATION

1. I certify to the best of my knowledge and belief, the statements of fact contained in this report are true and correct.
2. The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are personal, unbiased professional analyses, opinions, and conclusions.
3. I have no present or prospective interest in the property that is the subject of this report and I have no personal interest or bias with respect to the parties involved.
4. My compensation is not contingent upon the reporting of a predetermined energy level or direction in energy level that favors the cause of the client, the amount of energy level estimate, the attainment of a stipulated result, or the occurrence of a subsequent event.
5. This assignment was not based on a requested minimum environmental energy level or specific power density.
6. My compensation is not contingent on an action or event resulting from the analyses, opinions, or conclusions in, or the use of, this report.
7. The consultant has accepted this assessment assignment having the knowledge and experience necessary to complete the assignment competently.
8. My analyses, opinions, and conclusions were developed and this report has been prepared, in conformity with the American Board of Health Physics (ABHP) statements of standards of professional responsibility for Certified Health Physicists.

Date: September 3, 2020



Donald L. Haes, Jr.
Certified Health Physicist